REF 97

ACAPULCO TRENCH EXPEDITION (CHUBASCO) - 1954

1: 15 Oct. 1954; 19°00'N, 121°52.8'W; depth, 4138 m; core length, 14 dm; sediment type, greyish-brown, plastic clay.

Course 239, microrough bottom with occasional sea highs. One half hour before station, ship passed over approximately 100 F high rise; after this, smooth bottom at 2287 F. Five minutes before turn, bottom rose and in 5 min. came up to 2265 F. Ship turned around 180° and headed 059° for 10 min. at 7.5 knots. Bottom went back to 2283 F and station was made. During station, bottom rose again to 2262 F when the ball broke. 4250 m of wire out. (Depth, 4138 m.) After station, again microrough topography with highs 30-60 F and 1.5-2.5 miles broad. 30 miles south, very rough topography starts.

Top of core marred by catcher. Catcher content in mason jar. Manganese nodule on top left in place. Penetration 71".

2 16 Oct. 1954; 1919 GMT; 16°02'N, 125°01'W; depth, 4354 m; core length, 6 dm; sediment type, brownish-grey clay.

Course 210, speed 11. After passing California seamount, very smooth undulating bottom, 2300-2400 F with occasional seaknolls and fairly frequent small highs. Shortly before 1800 h the bottom dropped down to 2400 F and thereafter rose to approximately 2380 at 1825 h. 3 small highs, 50, 30 and 30 F at 1830, 1836, and 1848 h. Base approximately 1 mile each. 1852-1905 h very smooth, 2379-2383 F at 1903 h start of drop from 2380 F to 2388 F at 1905 h. Immediately thereafter a small high and course was reversed to 030° with retained speed. Station made 7 min. back in the smooth. Depth, 2381 F at ball signal (4354 m). 4505 m of wire out. Ship drifted back towards high during station and core seems to have been raised from position approx. identical with one at 1903 h. After station, gently undulating bottom slowly sloping downward and crossing the 2400 F line after about an hour's station over 2145.

Sediment brittle and fracturing on top. Manganese nodule at surface. Sediment very rich in sand-sized Mn-micronodules with nuclei of clayey material which seems to grade into altered glass. Approx. 5 in. slid out of the liner when corer was being taken aboard. Penetration approx. 70". Contents of catcher and nose in mason jar

3: 17 Oct. 1954; 0335 GMT; 15°00'N, 125°26.1'W; depth, 4380 m; core length, 15 dm; sediment type, brownish-grey clay.

Course 202, 11.5 knots. Smooth undulating bottom with small sea highs, one 60 F high and 2 miles broad occurring at 0243 h. Before station, bottom dropped to 2395 F. Ship turned around 180° and ran back 5 min. Ball broke at 2395 F. A loop of wire tangled around the breaker and tore loose with a jerk at the surface. The top 1/2 cm of sediment was shaken up a little. Underway 0530 h. After station, gently undulating bottom.

Sediment low in coarse material. Penetration, approximately 70". Water saved.

4: 17 Oct.1954; 1047-1244 GMT; 14°01.5'N, 125°29.5'W; depth, 4505 m; core length 17 dm; sediment type, buff clay.

Course 183°, 11.5 knots. Gently undulating bottom. Sea high, 30 F at 0810 h 4 miles broad. At 0900 h, 2340 F, gradually descending bottom to 2485 F at 1040 h. Course reversed to 003° at 1045 h. Ship lay to at 1047 h, 2480 F. Edo read 2480 until approximately 1120 h, when it started to ascend and reached 2440 F at 1200 h.

Sediment mottled and diffusely stratified (top 5 cm dark, approx. 5-15 light, approx. 15-20 dark).

5: 17 Oct. 1954; 1825-2018 GMT; 13°03.1'N, 125°28.8'W; core length, 10 dm; sediment type, greyish-brown clay.

Gently undulating bottom. From 2525 F at 1700 h, bottom, rose gradually to 2430 F at 1815 h. Course 180°, 11.5 knots. At 1817 h, course was reversed and ship moved back 8 min. over the 2430 F plateau. A sharp side echo appeared 1820-1823 h, but disappeared again. At 1925 h the ship lay to at station. 1905 h at 2431 F, corer was supposed to have hit bottom. No ball signal at 1950 h and the depth had increased to 2441 F. Apparently the core was raised from the slope. After station, on course 180°, 11.5 knots, bottom started rise suddenly from 2435 F at 2030 h to 2370 on top of high. At 2130 h the depth was 2500 F.

The core contained a manganese crust on top. Part of crust kept in jar. Mn and sand settling down along walls of liner. Clay in mouthpiece brittle. No $CaCO_3$ in mouthpiece clay. Water saved.

6 18 Oct. 1954; 0213-0414 GMT; 12°03.2'N, 125°30.5'W; depth, 4636 m; core length, 16 dm; sediment type, light buff clay.

Poor bottom echo due partly to interference with scattering layer, but seems to be gently undulating around 2530 F. Ball signal at 2535 F 0252 h.

Core stratified as core 4. Water saved.

7 18 Oct. 1954; 0947-1222 GMT; 11°10.1'N, 125°34'W; depth, 4645 m; core length, 16 dm; sediment type, light buff clay.

Topographic description identical to that of core 6, 2540 F. Ball signal at 1023 h at 2540 F.

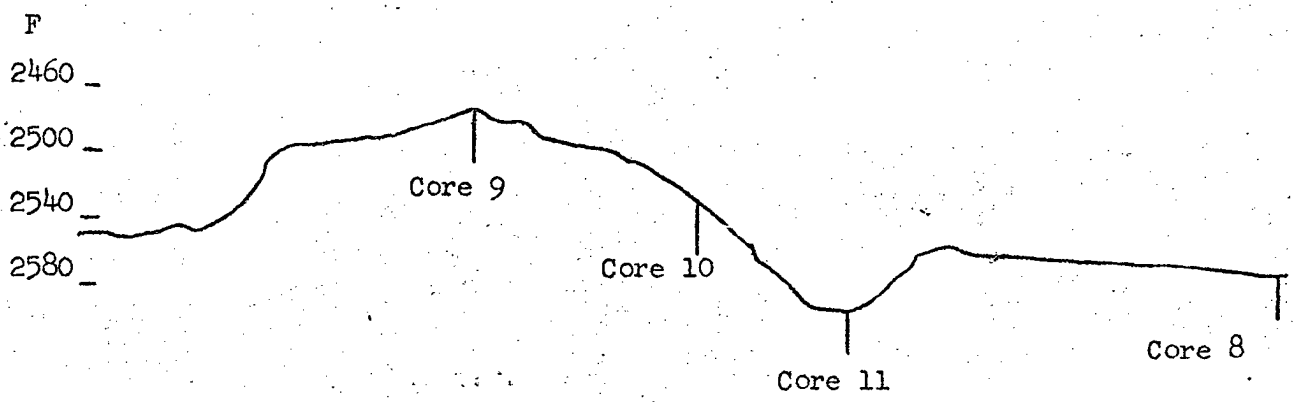
Sediment stratified as in core 4. Possibly more digging structures. Water saved. Mouthpiece contents in mason jar possibly contaminated by falling into the sink.

SPECIAL AREA I

(8) 18-19 Oct. 1954; 1812-0052 GMT; 10°13.5'N, 125°25.3'W; depth, 4720 m; core length, 16 dm; sediment type, light buff clay.

Topography similar to that of core 7. A ridge with a top depth of 2475 F was passed a couple of miles before station, and was later surveyed. No ball signal. Winch trouble on the way up delayed the operation. 1-2 cm of sediment in dummy above liner was lost.

(9) 19 Oct. 1954; surveying started 0052 h; 10°18.5'N, 125°27.2'W; depth, 4545 m; core length, 10 dm; sediment type, dark buff clay.



Together with cores 8, 10 and 11, core 9 was raised from a topographically pre-surveyed area. This area contains a ridge (summit extending locally to 2470 F from general level of 2500 F) running NNE - SSW, limited to the east by a 2585 F deep trough and an undulating plain at 2550 F, and to the west by a similar plain at approximately 2540 F. Core 9 was aimed at the highest spot of the ridge and may have hit this or close by on the top level plane.

Color stratification appears to be the same as in other buff cores but light-colored stratum below dark top appears to be thinner in this core. Manganese micronodules frequent. A large furrow extends along the wall from near the top, approximately 30 cm downward (marked on liner) and material from top flows down in this furrow (? apparently a Mn nodule, location marked on liner). The furrow does not appear to be caused by the core catcher; the corresponding finger does not spring back enough to explain the structure. Most probably it is a digging channel. Several smaller ones are seen in cross section along the core. Bottom of core is quite brittle. No $CaCO_3$ at top or bottom. Possible unconformity approximately 20 cm from bottom with buff above, brown below. Water saved. Core catcher contents in mason jar. For topographic detail, see special survey.

(10) 19 Oct. 1954; 10°21.4'N, 125°26.3'W; depth, 4645 m; core length, 12 dm; sediment type, dark buff clay.

This core was aimed at the steepest part of the slope and hit this somewhere between 2530 and 2550 F.

The sediment is stratified with worm channels and unconformity apparently overlying dark brown indurated clay. Water saved.

(11) 19 Oct. 1954; 10°21.9'N, 125°24.7'W; depth, 4730 m; core length, 18 dm; sediment type, light buff clay.

The top 1 cm of the contents of the liner was dried out and saved in a glass jar.

Operations in the area (8-11) completed at 2250 h 19 Oct.

12: 20 Oct. 1954; 0532-0752 GMT; 9°15.5'N, 125°26.7'W; depth, 4540 m; core length, 53 dm; sediment type, dark greyish-brown with light buff strata.

Gently undulating bottom 2450-2490 F. Core raised from intermediate depth (2475 F). Water saved.

13: 20 Oct. 1954; 0905-1206 GMT; 9°03.1'N, 125°21.6'W; depth, 4480 m; core length, 14 dm; sediment type, buff clay.

Gently undulating bottom at 2485 F shoaling to 2465 where the ship lay to on station, and to 2450 when ball broke. 35 min. later the depth had again increased and was 2470 F. Core thus raised from a topographic high.

The sediment appears normally stratified--dark, light, dark. Water saved.

14: 20 Oct. 1954; 1328-0245 GMT; 8°44.4'N, 125°29.0'W; depth, 4536 m; core length, 17 dm; sediment type, buff clay.

Gently undulating bottom ($\pm$ 15 F). Long time caused by two unsuccessful attempts. Core raised from very slight high (2470 F) above surrounding 2475.

Core normally stratified. Water saved.

15: 21 Oct. 1954; 0600-1049 GMT; 8°30.7'N, 125°25.4'W; depth, 4462 m; core length, 85 dm; sediment type, dark buff clay over coccolith ooze.

From station 14, bottom continued to undulate between 2460 and 2470 F. When corer hit bottom, however, the ship had drifted in over a slope (2470 F, 0723 h; 2435 F, 0830 h, drift speed approx. 2 knots) and the core was probably raised from a depth of 2440 F. The slope borders a plateau over which the ship continued under way to station 16.

Time	Depth	Time	Depth
1050	2435	1145	2380
1100	2435	1150	2360
1110	2535	1155	2375
1120	2430	1200	2375
1125	2420	1205	2390
1130	2415	1210	2350
1135	2420	1215	2345
1140	2405		

Station 16

The clay sediment appears normally stratified, but compressed sequences resting, apparently unconformably on light grey, fine-grained calcareous ooze. Water saved.

16: 21 Oct. 1954; 1217-1625 GMT; 8°17.0'N, 125°19.2'W; depth, 4334 m; core length, 6 dm; sediment type, dark buff clay.

Core raised from plateau with undulating surface starting at station 15. Ball signal at 1411 h on a slope between 2360 (1400 h) and 2380 F (1430 h) at a depth of approximately 2370 F. After station, undulating plateau continued. A steep-walled trench was passed between 1812 h (drop from 2485 F, 1810 h to 2565 F at 1815 h) and 1827 h (rise from 2570 F, 1825 h to 2465 F 1830 h). In the trench was a 30 F high smooth rise.

Sequence of sediment like core 15 with a calcareous bottom, but the unconformity cannot be seen through the wall of the liner.

17: 22 Oct. 1954; 0025-0440 GMT; 8°05.0'N, 125°25.0'W; depth, 4453 m; core length, 2 dm; sediment type, white hard coccolith ooze.

Ship continued over the fairly irregular plateau which varied between 2450 and 2380 F. An unsuccessful attempt to core was made 1850-2322 h 21 Oct. and the final one after return to compensate for drift. During station plateau shoaled to 2425 F at 0130 h, thereafter sank to 2445 where core was raised. Because of wire angle and excess wire (total 5156 m) it is also possible that the core was taken on the slope down to this depth. Depth now decreased again to 2390 F at 0440 h and ship left station. After station, depth varied between 2430 and 2450 F. At 0525 h ship passed in over a depression with irregular bottom varying between 2475 and 2515 F. At 0630 h the depression was passed, and bottom rose to 2320 F. Course was reversed to 030° at this point (0635 h), and ship returned back over depression and lay to station 18 at 0647 h.

The sediment shows irregular surface and is capped by thin layer of dark brownish-grey clay, which has partially flowed down along the wall of the liner. Water saved.

18: 22 Oct. 1954; 0646-1118 GMT; 7°54.9'N, 125°28.7'W; depth, 4609 m; core length, 17 dm; sediment type, buff-grey clay.

For the topography of approach, see core 17. During lowering, the ship drifted in to the middle of the trench where bottom was fairly even (2515-2520 F). Ball signal at 0903 h, 2520 F.

Sediment shows normal stratification. Sediment penetrated into dummy and 1/2 to 1" of top was lost. Sediment surface calcareous.

19: 22 Oct. 1954; 1330-1745 GMT; 7°41.4'N, 125°36.6'W; depth, 4416 m; core length, 16 dm; sediment type, calcareous surface.

At end of station 18 the bottom shoaled to 2440 F (1100 h). After station, depth increased again, and varied between 2450 (1125 h),2480 (1135), 2580 (1140), 2390 (1312), and 2420 F (1330 h on station 19). On station 19, depth decreased from 2445 (1400 h) to 2415 F (1540 h ball signal), 2420 (1600), 2395 (1630) and then increased to 2400 (1700) and 2410 F (1730 h). After station 19 again deeper area, 2430 (1805), 2450 (1810), 2475 (1815), 2480 F (1820 h). Core was thus raised from a gentle slope.

Normal stratification. Worm channel with internal cast on cleavage surface above core catcher. Bottom part prepared with glycerin in mason jar. Cast exposed in bottom surface of core. Water saved.

20: 22-23 Oct. 1954; 2004-0015 h; 7°22.2'N, 125°30.0'W; depth, 4549 m; core length, 5 dm; sediment type, white hard coccolith ooze.

After station 19, bottom sank from 2430 F (1755 h) to 2480 (1820 h) and then varied between this and 2460 F until it started to rise rapidly at 1905 h from 2460 to 2180 F (1920 h). Another seaknoll of 2260 F followed 2000 h. The course was reversed for 4 min., whereafter the ship lay to station 20, aiming at drifting back over the valley between the seaknolls. This succeeded, and ball broke at 2153 1/2 h, 2485 F, on the lower part of the slope of knoll No. 2. The deepest point passed during drift was 2495 F at 2300 h. After station, two more knolls were passed at 0045 (2290 F) and 0100 (2330 F). Thereafter, smooth and gently undulating bottom 2455-2465 F up to station 21.

Sequence of core 20 as sequence in core 17. Worm holes frequent in chalk top and filled with the greyish-brown top clay. Water saved.

21: 23 Oct. 1954; 0216-0622 GMT; 7°05.5'N, 125°31.0'W; depth, 4565 m; core length, 14 dm; sediment type, stratified calcareous ooze.

For topographic approach, see description of core 20. During drift on station, depth increased from 2460 F (0216 h) to 2500 (0600 h). Ball signal 0419 at 2490 F. After station, bottom shoaled to 2420 F (0700 h) then sank again to 2495 (0730 h). Water saved.

22: 23 Oct. 1954; 0854-1253 GMT; 6°42.5'N, 125°34.2'W; depth, 4400 m; core length, 16 dm; sediment type, stratified calcareous ooze.

Gently undulating bottom around 2490 F. Rose slowly before station to 2410 F, and oscillated around approximately 2420 F several hours after station. Core was raised from 2410 F. Water saved.

23: 23 Oct. 1954; 1625-1818 GMT; 6°12.0'N, 125°27.2'W; depth, 4500 m; core length, 17 dm; sediment type, stratified calcareous ooze.

Undulating bottom between 2425 and 2480 F before station. One-half hour after station, bottom rose to the general level of 2410 F. Core raised from 2460 F.

Approximately 1 1/2 cm of top rose into dummy but was saved in a mason jar.

24: 24 Oct. 1954; 0132-0337 GMT; 5°28.8'N, 125°28.6'W; depth, 4530 m; core length, 3 dm; sediment type, tough, fine-grained calcareous ooze.

After several hours of undulating bottom around 2400 F, a knoll was passed, culminating 0055 at 2065 F, whereafter the bottom fell to 2480 F at 0120. Ship lay to station 24 at 0132, aiming at drifting back to the foot of the knoll. This succeeded and the corer hit at 2475 F, 0336 h. Thereafter the bottom rapidly shoaled as the ship drifted in over the slope.

Core capped by approximately 2 cm of dark greyish-brown clay with irregular and relatively consolidated surface (oblique). In the prepared core, the obliqueness is hidden by a washout from the top clay. Water saved.

25: 24 Oct. 1954; 1804-2240 GMT; 4°37.1'N, 125°25.5'W; depth, 4480 m; core length, 17 dm; sediment type, stratified calcareous ooze.

Gently undulating bottom 2290-2275 F. Core at 2445 F (1949 h) between 2475 (1830 h) and 2425 (2230 h). Water saved.

SPECIAL AREA II
(PROB. UO WOOS-3U)

26: 25 Oct. 1954; start of survey for cores 26 and 27 at 0400 GMT; 3°32.7'N, 125°18.9'W; depth, 4417 m; sediment type, stratified calcareous ooze.

For topographic detail, see special survey. A series of ridges 2380-2415 F separated by valleys, 2475-2480 F. Core 26 raised from crest of ridge at 2415 F. Water saved.

27: 26 Oct. 1954; 0100 GMT; sediment type, stratified calcareous ooze. Water saved.

28: 26 Oct. 1954; 1741-2230 GMT; depth, 4610 m.

Van Veen sampler. Sample lost due to spinning of sampler on the way up. Sediment in weight stand and dummy saved as core 28.

29: 26 Oct. 1954; 2252-0217 GMT: 7°03.8'N, 126°24.3'W; depth, 4550 m; core length, 18 dm; sediment type, calcareous ooze.

Calcareous core for study of organic matter. Stored, deep frozen, in a glass jar.

30: 27-28 Oct. 1954; 2202-0205 GMT; 7°17.7'N, 127°24.6'W; depth, 3640 m; core length, 5 dm; sediment type, calcareous ooze.

Poseidon seamount. Core taken near summit of slope. 4450 m of wire were paid out, and it is not known how far behind the ship the corer trailed. The depth could, therefore, be somewhat greater.

Calcareous ooze, rich in forams, unconsolidated, high in carbonate, stratified. Water saved.

Calcareous material from bottom of core saved in plastic vial. Mouthpiece of corer dented.

31: 28 Oct. 1954; 0340-0819 GMT; 7°23.6'N, 127°17.0'W; depth, 4520 m; sediment type, stratified, calcareous (foram) ooze.

Close to Poseidon. The seamount sits on a platform at 2400 F with a depression of 2470 F. Outside the platform, the depth is approximately 2560 F. The core was attempted in the depression. Barrel broke (no ball signal; 1100 m of extra wire were paid out) but material was retrieved from the weight stand and saved in four mason jars. The top 10 cm were put in a separate jar and are suitable for radiocarbon check on different size fractions because of the relatively high carbonate content.

32: 28 Oct. 1954; 0903-1427 GMT; 7°22.2'N, 127°17.0'W; depth, 4520 m; core length, 7 dm; sediment type, stratified calcareous ooze.

Repeated attempt close to position of core 31.

Water from above core saved. The top 10 cm look abnormal with fluid clay resting on foram-rich material. Graded on bottom or by washing around in liner? The latter alternative is possible as there was no ball break and approximately 1000 m of extra were paid out.

Fractures formed in core after sealing.

33: 28-29 Oct. 1954; 1758-0057 GMT; 7°42.5'N, 127°06.8'W; depth, 4540 m; core length, 16 dm; sediment type, stratified calcareous ooze.

Irregular topography with approximately 100 F relief. Core taken in depression (graben ?).

Top 1-2 cm of core shaken up owing to dragging. Succession of top strata appears anomalous.

34: 29 Oct. 1954; 0244-0803 GMT; 8°00.6'N, 126°58.0'W; depth, 4440 m; core length, 13 dm; sediment type, top sediment slightly calcareous.

Irregular topography as in core 33. Core taken in topographic low.

The top approximate 10 cm were entirely shaken up when corer dragged along bottom (no ball signal, 1000 m of wire overpaid). Top 1 cm (very fluid owing to the shaking) lost. Corresponds to approximately 0.2 cm of normally compacted and dehydrated material.

The corer was apparently towed in horizontal position over old outcrops. Ball breaker contained coccolith ooze with flat manganese nodules, and between weight and flange of weight stand, was manganese encrusted clay. These two samples saved in separate mason jars, labelled 34 ball breaker and 34 weight stand.

35: 29 Oct. 1954; 0944-1413 GMT; 8°11.0'N, 126°58.4'W; depth, 4517 m; core length, 17 dm; sediment type, apparently non-calcareous.

Core taken in topographic low: Top approximate 2 cm disturbed during dragging. Water saved.

36: 29 Oct. 1954; 1545-2020 GMT; 8°20.7'N, 127°01.1'W; depth, 4570 m; sediment type, normally stratified buff clay.

Core taken in topographic low. Water saved.

37: 29-30 Oct. 1954; 2207-0231 GMT; 8°37.2'N, 126°57.2'W; depth, 4555 m; sediment type, normally stratified buff clay.

Core raised from a topographic low. Water saved.

38: 30 Oct. 1954; 1951-2347 GMT; 8°11.6'N, 125°18.5'W; depth, 4315 m; core length, 2 dm; sediment type, hard calcareous sediment.

Irregular topography with hills 2360 F and deeper, intermediate terraces, and deeps down to approximately 2460 F. Features, approximately a mile broad, offer steep slopes. Area found suitable at previous crossing, for study of outcropping chalk presumably Tertiary. Core raised from top of high.

The stratigraphy of the sediment is similar to that of core 17. Surface of fine-grained, hard calcareous sediment highly irregular and penetrated by worm channels. On top, a thin capping of clay of greenish and brownish hues and with granular structure. Water saved.

39: 31 Oct. 1954; 0046-1055 GMT; 8°09.0'N, 125°19.5'W; depth, 4360 m; core length, 17 dm; sediment type, normally stratified buff clay.

Same area as core 38. See special topographic survey. No ball signal. 5250 m paid out. Cable had to be cut and respliced at 4700 m but corer seems to have left bottom at the time, and there is no indication of extensive dragging on the bottom.

40: 31 Oct. 1954; 1250-1732 GMT; 8°06'N, 125°25.8'W; depth, 4415 m; core length, 5 dm; sediment type, bottom, hard white chalk ooze; top, greyish-buff clay.

Same area as cores 38 and 39. The great number of similar topographic features, the uncertainty about the drift here in the shear zone between the two currents, and the navigational difficulties, caused by the almost permanent overcast, made it uncertain whether the three cores were raised from one single topographic high and adjacent low.

Core 40 was raised from half way down the slope (2415 F) between the crest (4315 m, core 38) and the deep bottom. No ball signal; 5173 m paid out.

The transition between the bottom hard, white, chalk ooze and the top greyish-buff clay is not observable through the wall of the liner due to smear along the core.

For details of topography, see special survey. CHUB SPECIAL AREA III

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AREA 13-2